

## CLAIMS

That which is claimed:

- [33] 1. A method of operating a multiprotocol label switching (MPLS) network, comprising:
- establishing a label switched path (LSP) that connects a first provider edge (PE) label switched router (LSR) a second PE LSR, and a customer edge (CE) LSR;
  - encapsulating packet traffic that is associated with a plurality of different layer two technologies with an MPLS label; and
  - securely routing the encapsulated packet traffic from the first PE LSR through the second PE LSR to the CE LSR using the LSP.
- [34] 2. The method of Claim 1, wherein the layer two technologies comprise asynchronous transfer mode (ATM) technology, frame relay technology, point-to-point protocol/high level data link control (HDLC) technology, private line time division multiplexing (TDM), and/or Ethernet technology.
- [35] 3. The method of Claim 1, wherein the MPLS label is signaled between the first PE LSR and the CE LSR and wherein the second PE LSR uses an internal service provider IP-virtual private network to maintain a securely partitioned network for customers.
- [36] 4. The method of Claim 1, wherein the MPLS label is statically provisioned from the second PE LSR to the CE LSR and stitched to a signaled LSP in a service provider network that connects the first and second PE LSRs.
- [37] 5. The method of Claim 4, further comprising:
- provisioning a pseudo wire virtual circuit within the LSP for each one of a plurality of attachment circuits at the first PE LSR.
- [38] 6. The method of Claim 5, wherein the LSP and/or pseudo wires, which are terminated via signaling at the second PE LSR, transit on to the CE LSR.

[39] 7. The method of Claim 1, wherein each of the packets comprising the packet traffic comprises a control word that identifies one of the plurality of different layer two technologies that the respective packet is associated with.

[40] 8. A system for operating a multiprotocol label switching (MPLS) network, comprising:

means for establishing a label switched path (LSP) that connects a first provider edge (PE) label switched router (LSR) a second PE LSR, and a customer edge (CE) LSR;

means for encapsulating packet traffic that is associated with a plurality of different layer two technologies with an MPLS label; and

means for securely routing the encapsulated packet traffic from the first PE LSR through the second PE LSR to the CE LSR using the LSP.

[41] 9. The system of Claim 8, wherein the layer two technologies comprise asynchronous transfer mode (ATM) technology, frame relay technology, point-to-point protocol/high level data link control (HDLC) technology, private line time division multiplexing (TDM), and/or Ethernet technology.

[42] 10. The system of Claim 8, wherein the MPLS label is signaled between the first PE LSR and the CE LSR and wherein the second PE LSR uses an internal service provider IP-virtual private network to maintain a securely partitioned network for customers.

[43] 11. The system of Claim 8, wherein the MPLS label is statically provisioned from the second PE LSR to the CE LSR and stitched to a signaled LSP in a service provider network that connects the first and second PE LSRs.

[44] 12. The system of Claim 11, further comprising:

means for provisioning a pseudo wire virtual circuit within the LSP for each one of a plurality of attachment circuits at the first PE LSR.

[45] 13. The system of Claim 12, wherein the LSP and/or pseudo wires, which are terminated via signaling at the second PE LSR, transit on to the CE LSR.

[46] 14. The system of Claim 8, wherein each of the packets comprising the packet traffic comprises a control word that identifies one of the plurality of different layer two technologies that the respective packet is associated with.

[47] 15. A computer program product for operating a multiprotocol label switching (MPLS) network, comprising:

a computer readable storage medium having computer readable program code embodied therein, the computer readable program code comprising:

computer readable program code configured to establish a label switched path (LSP) that connects a first provider edge (PE) label switched router (LSR) a second PE LSR, and a customer edge (CE) LSR;

computer readable program code configured to encapsulate packet traffic that is associated with a plurality of different layer two technologies with an MPLS label; and

computer readable program code configured to securely route the encapsulated packet traffic from the first PE LSR through the second PE LSR to the CE LSR using the LSP.

[48] 16. The computer program product of Claim 15, wherein the layer two technologies comprise asynchronous transfer mode (ATM) technology, frame relay technology, point-to-point protocol/high level data link control (HDLC) technology, private line time division multiplexing (TDM), and/or Ethernet technology.

[49] 17. The computer program product of Claim 15, wherein the MPLS label is signaled between the first PE LSR and the CE LSR and wherein the second PE LSR uses an internal service provider IP-virtual private network to maintain a securely partitioned network for customers.

[50] 18. The computer program product of Claim 15, wherein the MPLS label is statically provisioned from the second PE LSR to the CE LSR and stitched to a signaled LSP in a service provider network that connects the first and second PE LSRs.

[51] 19. The computer program product of Claim 18, further comprising:  
computer readable program code configured to provision a pseudo wire virtual circuit within the LSP for each one of a plurality of attachment circuits at the first PE LSR.

[52] 20. The computer program product of Claim 19, wherein the LSP and/or pseudo wires, which are terminated via signaling at the second PE LSR, transit on to the CE LSR.

[53] 21. The computer program product of Claim 15, wherein each of the packets comprising the packet traffic comprises a control word that identifies one of the plurality of different layer two technologies that the respective packet is associated with.

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